REMARKS

Claims 1-88 are all the claims presently pending in the application. By this Amendment, claims 47-82 are amended. The amendments introduce no new matter. Applicant gratefully acknowledges Examiner's indication that claims 22-23 would be **allowable** if rewritten in independent format, and that claims 1-19, 24-26, and 83-88 are **allowed**. However, for at least the reasons discussed below, Applicant believes that all of the claims herein are allowable.

It is noted that the claim amendments, if any, are made only to assure grammatical and idiomatic English and improved form under United States patent practice, and are not made to distinguish the invention over the prior art or narrow the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the allowed claim.

Claims 46-82 stand rejected under 35 U.S.C. §101 and 35 U.S.C. §112, second paragraph. Although Applicant completely disagrees with the rejections, the claims are amended in accord with the Examiner's suggestion in an effort to expedite prosecution. No substantive amendments are made to the features of claims 46-82, which recite features identical to those the Examiner previously **allowed** in the Office Action of October 4, 2006, and again in the Office Action of March 21, 2007.

Claims 20-21 and 27-28 stand rejected under 35 U.S.C. §102(e) as being anticipated by Lauffenburger, et al. (US 6,661,774).

The rejection is respectfully traversed in the following discussion.

THE CLAIMED INVENTION

The claimed invention, as exemplarily defined by independent claim 20, is directed to a virtual output queuing (VOQ) controlling device in, for example, an input buffering switch with a virtual output queuing technique and an input buffering switch. A specialized class for constant bit rate (CBR) traffic and a connection request generation section makes a connection request for a switch scheduler, which can execute three-step priority control. The connection request generation section makes connection request of the specialized class for a CBR traffic prior to the connection request of the other classes for the switch scheduler. As defined by claim 21 the virtual output queuing controlling device is in an input buffering switch with a virtual output queuing technique and an input buffering switch, includes a first specialized class for CBR traffic, a cell read-out controlling section that reads out the cells from each of the classes, and a connection request generation section that makes connection request for a switch scheduler, which can execute two-step priority control, when the connection request generation section receives a connection request from the switch scheduler, the cell read-out controlling section reads out the cells from the first class prior to the second class.

In a conventional packet switch, it is impossible to simultaneously realize a CBR service, which requires simultaneously guaranteed bandwidth and delay properties, and the minimum bandwidth guarantee-type service. This is, first, because of competition among the input interfaces, and second, because of competition among classes within the input interface.

The claimed invention, on the other hand, provides a VOQ controlling device that

provides the CBR service together with the minimum bandwidth guarantee-type service in the input buffering switch with the VOQ technique.

THE PRIOR ART REJECTION

The Lauffenburger Reference

The Examiner alleges that Lauffenburger teaches the claimed invention described in claims 20, 21, 27, and 28. Applicant submits, however, that there are elements of the claimed invention, which are neither taught nor suggested by Lauffenburger.

With regard to independent claim 20, Lauffenburger fails to disclose or suggest at least "A virtual output queuing controlling device in an input buffering switch with a virtual output queuing technique, comprising: a specialized class for a CBR traffic; and a connection request generation section that makes a connection request for a switch scheduler, which can execute a three-step priority control, characterized in that said connection request generation section makes the connection request of said specialized class for a CBR traffic prior to the connection request of the other classes for said switch scheduler", as recited in the claim.

Certain arguments of the Amendment filed June 20, 2007, are repeated below for the Examiner's convenience.

The Examiner alleges that Lauffenburger discloses, "*a first specialized class for a CBR traffic 14 (fig. 1 col. 10 lines 58-67); a second class 14 for the other traffics than the CBR traffic (fig. 1 col. 10 lines 58-67); a cell read-out controlling section 20 that reads out cells from each of said classes (fig. 1 col. 3 lines 44-53); and a connection request generation section 16 that makes a connection request for a switch scheduler 24 (fig. 1 col. 3 lines 41-44), which can execute a priority control, characterized in that, when said connection request*

generation section received connection request from said switch scheduler, said cell read-out controlling section is a section that reads out the cells from said first class prior to said second class (col. 3 lines 54-61 and col. 11 lines 3-11)." Office Action, p. 4.

The Examiner alleges that Lauffenbuger discloses a specialized class for CBR traffic. However, Lauffenburger discloses only that CBR traffic is an example of traffic considered to be "high" priority in one embodiment, and relatively higher priority than another type of traffic (ABR). Lauffenburger fails to disclose or suggest a specialized class for CBR traffic, different from all other traffic.

Lauffenburger discloses only a single class for all traffic. The Examiner implicitly confirms this by listing the same reference (Fig. 1, reference 14) for the two different classes of traffic. Lauffenburger discloses that the cells will be given different priorities, and lists CBR and ABR signals as examples of higher and lower priority signals, respectively. However, Lauffenburger fails to disclose or suggest that CBR is unique or the only high priority traffic, or that CBR signals are treated differently from other high-priority traffic. Lauffenburger fails to disclose or suggest a unique class for CBR and a second class for all other non-CBR traffics. "*For example, packets supporting constant bit rate (CBR) signals, such as video signals, require a continuous flow of data transmitted at a constant rate. CBR signals tolerate little deviation in transmission rate before the quality of the signal degrades. CBR signals, thus, receive a high priority relative to other types of signals. Other types of signals, such as available bit rate (ABR), typically involve bursty traffic patterns. ABR signals generally involve sporadic transmission of blocks of cells. ABR allows greater flexibility as to the timing of transmission. Consequently, ABR signals may receive a lower transmission priority designation than, for example, CBR cells.*" Lauffenburger, col. 10, line

58 – col. 11, line 2.

Lauffenburger discloses a same path for the single class of cells, from Buffer 14 to PCI Bus 20, to Data Mover 44, to Scheduler 24, to Scheduling Ring 32 in accord with Priority Map 40. Each packet is then scheduled according to its priority relative to available space in the Scheduling Ring. Lauffenburger, col. 5, line 61 – col. 6, line 27.

In response to the above argument, the Examiner relies on Lauffenburger, col. 3, lines 26-27. However, the cited passage discloses only, "*System 10 may comprise a host memory 12; which includes a plurality of host data buffers 14. Each host data buffer 14 may hold one or more packets 15a-15n, each packet 15 containing a block of data that may be segmented into one or more cells 17.*" Lauffenburger, col. 3, lines 26-30. The Examiner correctly notes that, "*Herein, Lauffenburger discloses reference 14 represents a plurality of buffers.*" Office Action, p. 4.

However, a plurality of buffers does not disclose or suggest a separate specialized class for CBR traffic, as recited in the claim.

The Examiner alleges, "*Thus, these plurality buffers are used to store different classes of traffic (col. 10 lines 58-67).*" Office Action, pp. 4-5.

However, the cited reference, as discussed above, discloses only that CBR packets, "for example," receive higher priority than some other types of signals. "*Consequently, ABR signals may receive a lower transmission priority designation than, for example, CBR cells.*" Lauffenburger, col. 10, line 67 – col. 11, line 2. Lauffenburger mentions CBR traffic only "for example," and never discloses or suggest that there is a unique class for CBR traffic.

Further, no support is found for the Examiner's allegation that a plurality of buffers

are for different classes of traffic.

Instead, the buffers 14 are ordinary input buffers for all traffic generally and are not distinguished from each other in any way. "*Initially, a plurality of data packets 15 reside within data buffers 14 contained in host memory 12. Data packets 15 will be segmented into ATM cells 17 for transmission to various other network elements.*" Lauffenburger, col. 5, lines 35-38. Thus, the data packets 15 are not yet segmented.

"*Each data packet 15 is associated with a virtual channel that will ultimately service the transmission of cells 17 within the packet 15. Control requests 18, which are associated with data packets 15, also reside within host memory 12, and are stored in control buffers 16. Control requests 18 contain instructions on scheduling transmission of associated cells 17.*" Lauffenburger, col. 5, lines 38-44. Thus, additional information (control requests 18) is required to schedule the transmission of the associated cells; there is no differentiation according to the buffers.

Thus, Lauffenburger fails to disclose or suggest a specialized class for CBR traffic, as recited in the claim.

Lauffenburger fails to disclose or suggest at least a connection request generation section that makes a connection request for a switch scheduler, which can execute a three-step priority control, characterized in that said connection request generation section makes the connection request of said specialized class for a CBR traffic prior to the connection request of the other classes for said switch scheduler .

Instead, Lauffenburger discloses prioritizing each cell as it arrives, relative to previously received cells. Although CBR traffic may be given a relatively high priority, no

distinction is made between CBR traffic and high-priority non-CBR traffic. "*The present invention continuously reorganizes the scheduling ring as new cells are scheduled and rescheduled for transmission, and tracks transmission error associated with each cell (i.e., the difference between the actual scheduling time and the ideal scheduling time). By scheduling transmission of cells based on their relative priorities and continuously accounting for transmission error incurred while servicing previously transmitted cells, the present invention provides a significant advantage of facilitating efficient traffic shaping of transmission of cells supporting various qualities of service.*" Lauffenburger, col. 7, lines 11-21.

In response to the above argument, the Examiner relies upon Lauffenburger, col. 10, lines 57-67 and col. 11, lines 1-11.

However, the cited passages, as discussed above, disclose only an exemplary comparison of CBR and ABR signals having different priorities. Lauffenburger fails to disclose or suggest that no other traffic may have a priority as high as CBR traffic; instead, CBR traffic is listed only as an example of traffic having a relatively higher priority than ABR traffic. "*For example, packets supporting constant bit rate (CBR) signals, such as video signals, require a continuous flow of data transmitted at a constant rate. CBR signals tolerate little deviation in transmission rate before the quality of signal degrades. CBR signals, thus, receive a high priority relative to other types of signals. Other types of signals, such as, available bit rate (ABR), typically involve bursty traffic patterns. ABR signals generally involve sporadic transmission of blocks of cells. ABR allows greater flexibility as to the timing of transmission. Consequently, ABR signals may receive a lower transmission*

priority designation than, for example, CBR signals." Lauffenburger, col. 10, line 57 – col. 11, line 2.

Lauffenburger further lists CBR as an example of "high" priority traffic in a particular embodiment, without disclosing or suggesting that CBR traffic is the only traffic which may be designated as "high" priority. "*System 10 may provide various levels of granularity of priority associated with various types of signals being serviced. In the illustrated embodiment, transmission priorotiy 80 may assume one of four values: "high" priority, "medium" priority, "low" priority, and "unoccupied." In this embodiment, constant bit rate signals receive a high priority designation, and efficient bit rate and ABR signals are designated as low priority.*" Lauffenburger, col. 11, lines 3-11.

Thus, Lauffenburger fails to disclose or suggest a three-step priority control, characterized in that said connection request generation section makes the connection request of said specialized class for a CBR traffic prior to the connection request of the other classes. By using CBR traffic only as an example, Lauffenburger clearly discloses that other traffic could also be "high" priority, and that CBR traffic is not segregated into a unique specialized class.

Claim 21 recites features substantially similar to claim 20, discussed above, and stands rejected on a same basis. Applicant respectfully traverse the rejection of claim 21 on substantially similar grounds as discussed above with regard to claim 20.

Claims 22 and 23 depend from claim 21, and inherit all features and limitations thereof. Applicant submits that claims 22 and 23 are patentable for at least this reason, as well as for the additional subject matter they recite.

With regard to independent claims 27 and 28, Applicant claims an input buffering

switch comprising features substantially similar to those recited in claims 20 and 21. The Examiner has addressed claims 20, 21, 27, and 28 as a group. Applicant traverses the rejection of claims 27 and 28 on the same grounds as claims 20 and 21, above.

Therefore, turning to the clear language of the claims, Applicant submits that Lauffenburger has failed to disclose an input buffering switch comprising a first specialized class for a CBR traffic and a connection request generation section that makes a connection request for a switch scheduler, which can execute priority control characterized in that said connection request generation section makes connection request of said specialized class for a CBR traffic prior to the connection request of the other classes, as similarly recited in independent claims 27 and 28.

Applicant submits that there are elements of the claimed invention that are not taught or suggested by Lauffenburger. Therefore, Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of claims 20-21 and 27-28 over Lauffenburger. Applicant respectfully requests the Examiner to reconsider and withdraw the objection to claims 22-23.

CONCLUSION

In view of the foregoing, Applicant submits that claims 1-88, all the claims presently pending in the application, are patentably distinct over the prior art of record and are allowable, and that the application is in condition for allowance. Such action would be appreciated.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned attorney at the local telephone number listed below to discuss any other changes deemed necessary for allowance in a telephonic or personal interview.

To the extent necessary, Applicant petitions for an extension of time under 37 CFR §1.136. The Commissioner is authorized to charge any deficiency in fees, including extension of time fees, or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 20 December 2007

Donald A. DiPaula
Registration No. 58,115

Sean M. McGinn
Registration No. 34,386

McGinn Intellectual Property Law Group, PLLC
8321 Old Courthouse Road, Suite 200
Vienna, VA 22182-3817
(703) 761-4100
Customer No. 21254